



Sustainable Sphere Project

“Working Energy Efficiency”

The Sustainable Sphere Project was a cooperative effort between the Greater Lansing United Nations Association, Hendy Tool and Engineering Company of Lansing, and two departments within the Michigan State University College of Engineering - Mechanical and Electrical Engineering. The Greater Lansing United Nations Association received a \$4,776 Community Energy Project grant from the Energy Office in October 1998. The goal of the project was to construct a model of the Earth that is powered by its own renewable energy resources - solar and wind power.

Dr. Stanley P. Wronski, President of the Greater Lansing United Nations Assoc., initiated the project in collaboration with Mr. Kenneth Hendy who served as an engineering consultant on the project. Professors Brian S. Thompson, Diane Rover, and Roland Zapp advised the student teams that worked on the project. This design project required collaboration between both mechanical and computer/electrical engineering students. This interface between the different engineering disciplines was crucial in designing a system which optimized the energy received from the solar and wind power.

The mechanical engineering team was responsible for the design and manufacture of the sphere, the structure, and the drive-train components. The electrical engineers designed and integrated the power systems and computer systems to turn the sphere. Computer engineers created software to track and run all of the components.

The Sustainable Sphere exhibits the Earth's 24 hour rotation pattern as well as the position of the Earth relative to the sun throughout the year. As the primary goal of the project is to educate the public on the Earth's renewable energy resources, all mechanical and electrical components are powered by solar and wind energy - a 85 watt photovoltaic system and a 400 watt wind generator.

A total of over 30 MSU students were involved from the project's inception to its completion. Over 200 other college, high school, and middle school students attended the Michigan State University Design Conferences in April and December 1999 at which the project was displayed. The Sustainable Sphere was donated to the Impression 5 Science Center in Lansing where it is on display.

Feel free to contact us if you have any ideas for case studies or other questions :

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